ASSOCIATION AMONG IMPROPER SLEEP, STRESS AND PARAFUNCTIONAL HABITS IN DENTAL STUDENTS AT DOW UNIVERSITY OF HEALTH SCIENCES

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OBJECTIVE: The aim of the study was to evaluate the association among improper sleep, stress and parafunctional habits in undergraduates and postgraduate dental students at Dow University of Health Sciences.

METHODOLOGY: The study design was Cross-sectional. 579 students (Undergraduate and postgraduate) were included in the study by convenient sampling method. The response rate was 96.5%. Data was gathered through self-compiled questionnaire and it consisted of demographic variables, sleep related questions, stress consequences, occupational stresses and the stress reduction methods. SPSS version 16 was used for statistical analysis. Chi-square test was applied to evaluate association among improper sleep, stress and parafunctional habits and the locations of pain. P-value less than 0.05 was considered significant.

RESULTS: It was found that most common stress-related consequence were grinding teeth at night (n=322, 55.6%), feeling numbness in the mouth in the morning (n=255, 44%) have pain in temporomandibular joint (n=224, 38.7%) and jaw joints affected (n=271, 46.8%). More than 80% respondents (n=487) also reported to feel frustrated (84.1%) and restless during stress (n=507, 87.6%). The association among stress, improper sleep and teeth grinding found to be significant (p<0.05).

CONCLUSION: It was concluded that there was significant association among improper sleep, stress and parafunctional habits in dental students at Dow University of Health Sciences.

KEYWORDS: Stress, Sleep, Bruxism, Dental Students.


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INTRODUCTION

The term "stress", as it is currently being used was coined by Hans Selye, who defined it as "the non-specific response of the body to any demand for change". The practice of dentistry has long been associated with high levels of occupational stress. Hermanson reported emotional illness ranked third among illnesses in dentists and Cooper reported the dental profession is the most stressful of all health professions.

People under stress can have insomnia. Insomnia is one of the causes which stress induces and affect the quality of the sleep. It also causes hyperarousal, which makes the balance between sleep and wakefulness distraught. Laboratory evidence shows that fewer sleep durations of 4-5 hours affect physiological and neurobehavioral functioning in a negative way. It is found that bruxism, mainly, as a response to release daily emotional stress; is more common in depressed, anxious and emotionally stressed individuals.

De Leeuw et al consider that muscle dysfunction and associated pain are often the results of stress-induced muscle hyperactivity. The muscle dysfunction determined by the stress can cause changes in the temporomandibular joint. The hyperactivity in elevator mandibular muscles increases intra-articular pressure and biomechanical alterations of temporomandibular joint with the result micro traumatic deterioration of the joint capsule and/or...
the attachment disc can develop7.

The term stress describes external demands (physical or mental) on an individual’s physical and psychological wellbeing6. Stressors associated with dentistry include time and scheduling pressures, managing uncooperative patients and the highly technical and intensive nature of work9-12. This stress can be the prime factor to depression, anxiety, substance misuse, absenteeism, diminished work efficiency, and burnout (a term that describes the experience of long-term work-related exhaustion and diminished interest)13. The origin of this occupational stress may have their origin in the educational process as dental students experience high levels of stress during training14.

The undergraduate education is a delicate period in a student life. The students from professional courses do feel a great amount of burden in dealing with academic stress and anxiety. This can occur during the transition of the students from an intermediate to a professional academic status15. Undergraduate students need to cope up with the academic and social demands that they may encounter in university studies in their preparation for professional careers16.

The parafunction in dentistry refers to those actions of the stomatognathic system that are considered to fall outside of functional activities. Lip and cheek chewing, fingernail biting, and teeth clenching are examples of parafunctional activity. Out of different activities of parafunction, a literature on teeth grinding exceeds the rest17. Bruxism is an involuntary, parafunctional, excessive grinding, clenching, or rubbing of the teeth18,19. It is a potentially disparaging habit that results in tooth wear, damage to the structure of the surrounding teeth, inflammation and recession of the gums, increased risk of periodontal disease, muscle pain, and temporomandibular joint (TMJ) dysfunction.' These symptoms are also associated with headaches, jaw aches, and stiffness or tightening of the shoulders and neck20. It is also reported that individuals with sleep bruxism are three to four times more likely to experience jaw pain and limitation of movement than people who do not experience sleep bruxism21,22.

The literature has been documented regarding the association among improper sleep, stress and parafunctional habits according to the academic year of clinical dental students.

**METHODOLOGY**

It was a descriptive cross-sectional qualitative study carried out using a self-administered questionnaire among undergraduates (second year, third year, and final year) and postgraduates working at dental institutes of Dow University of Health Sciences. The questionnaire covered demographic question, sleep related questions, stress consequences, occupational stressors and stress reduction methods. The data obtained via questionnaire was analysed with SPSS-16. Descriptive analysis was made regarding the data and result was drawn in the form of tables. Chi-square test was used to study the associations between variables. The purpose of this study was communicated to the students, and student participation in the research was voluntary. The response rate was 96.5%.

**RESULTS**

This study was carried out among undergraduates and postgraduates. Table 1 shows the demographics of the study population. Table 3 showed that more than half of the population go to bed late (n=312, 53.9%) and find difficulty getting into sleep (n=375, 64.8%). Table 3 also represents the consequences of stress respondents suffered. Out of different consequences, it was found that most common stress-related consequence was grinding their teeth at night (n=322, 55.6%). Table 3 showed the occupational problems that have to be suffered by the students. More than half of the dental students were under occupational stress (n=322,
55.6%) and less than half of the respondents reported to have disturbed academic (n=269, 46.5%) and clinical skills (n=213, 36.8) due to stress.

Table 2 is related to stress reduction methods. Respondents were asked that what measure they usually take when in time of stress. Out of the different methods listening music (n=366, 63.2%) was found to be most common stress reduction method. Table 3 also pertains to the association between insomnia and stress and parafunction. This association was found to be significant (p<0.05).

Table 3 also shows that the factors which were associated with parafunctional activities was also associated with sleep disturbance and occupational stressors.
DISCUSSION

Dental education is perceived as being stressful course\textsuperscript{26}. The students have a high level of fears and insecurities which make them likely to disturb their mental and physical health. This made the study to choose dental students, as their sample population to highlight the association of stress with improper sleep and developing parafunctional habits\textsuperscript{15,16}.

It is found that most of the dental and medical students go to bed late due to tough and lengthy academic syllabus and long study hours. Their sleep is improper and they have to further experience daytime sleepiness and tiredness in the morning\textsuperscript{27}. The day time nap becomes important for the students. Waking up too late and having difficulty getting into sleep makes them susceptible to exert pressure on their masticatory muscles and apply external pressure on their occlusal surface of the tooth to release the stress they are going through. This habit for a prolonged period of time makes their temporomandibular joint tender and it becomes painful on opening, closing and chewing. Applying pressure for long hours also makes the muscles numb, so the numbness in mouth was reported\textsuperscript{17-22}.

The most frequent consequences of stress, according to our study, were feeling restlessness and frustration, teeth grinding, numbness in mouth, pain in temporomandibular joint\textsuperscript{9-12}. The high prevalence of these consequences was further analysed and it was revealed that high prevalence of difficulty getting sleep was a significant factor in developing these consequences. Therefore improper sleep is to an extent found to be associated with teeth grinding\textsuperscript{5,28}.

The main result was that the experience of stress was the most significant factor associated with frequent bruxism among the dental students. The bruxers were also found to have pain in temporomandibular joint and they were found to be restless and frustrated\textsuperscript{21,22}. The study also revealed, there is a significant association found in respondent between difficulty falling asleep and teeth grinding\textsuperscript{5}.

The dental students participated in this study were found to have occupational stress. The majority have fear of failure in their examination, unemployment and respondents who had teeth grinding habit also has high level of these fear. 14 Other factors, regarding occupational stressors were also found in respondents who were bruxers and have pain in temporomandibular joint.

This study revealed that stress was found to be associated with sleep disturbance leading to development of parafunctional habits. According to the study, the students who were under high academic pressure were found to be restless and frustrated due to fear of failure and unemployment which leads to their teeth grinding habits and their jaw joint gets affected and they start getting pain in their temporomandibular joint. The study revealed that improper sleep was major factor in developing these habits. It should be recommended that students should take proper sleep in order to get rid of their parafunctional habits and they should use stress reduction methods to get less affected of the stressful conditions. Thus, stress reduction program could be implemented. Such programs for dental students as including specific courses, stress-reduction sessions, introduction to behavioural sciences and faculty incorporated advising systems foster coping behaviours that are useful on a daily basis, as well as preventative measures to reduce chronic stress effects. Students should also be advised to take proper sleep so that students can perform better in their dental environment.

CONCLUSION

It was concluded that there was significant association among improper sleep, stress and parafunctional habits in undergraduate and postgraduate dental students at Dow University of Health Sciences.

Author Contribution:
KPS conceived the project, designed Questionnaire and made significant contribution to reviewing and re-writing of article, YAB contributed to questionnaire designing, data collection, write up of introduction & methodology, MA did the data collection, write-up of results & discussion.

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